

Appln. No.: 10/776,472
Amndt. dated April 25, 2005
Reply to Office Action of December 23, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Withdrawn) A metallic alloy for coating a metal surface comprising a deoxidizing element, wherein said deoxidizing element reduces a metal-oxide layer on said metal surface.
2. (Withdrawn) The metallic alloy of claim 1, wherein said deoxidizing element is a transition metal, selected from the group consisting of manganese, chromium, vanadium, titanium, zirconium, hafnium, niobium, tantalum, aluminum, lanthanide metals in combination with and oxygen seeking nonmetal/metalloid selected from the group consisting of silicon, carbon, boron, phosphorous, sulfur and combinations thereof.
3. (Withdrawn) The metallic alloy of claim 1 wherein said deoxidizing element is further characterized in that it does not chemically interact with said metallic alloy.
4. (Withdrawn) The metallic alloy of claim 1, wherein said metallic alloy base metal is selected from the group consisting of iron, nickel, cobalt, manganese, chromium, titanium, vanadium, zirconium, niobium, hafnium, tantalum, tungsten, and aluminium.

Appln. No.: 10/776,472
Amndt. dated April 25, 2005
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5. (Withdrawn) The metallic alloy of claim 1 wherein said deoxidizing element is present at a level of 5 to 70%.

6. (Currently Amended) A method of forming a metallic coating on a an oxidized metal surface layer comprising:

(a) providing [a] an iron based metallic coating alloy comprising wherein said alloy includes a deoxidizing element selected from the group consisting of manganese, chromium, vanadium, titanium, zirconium, hafnium, niobium, lanthanide metals and combinations thereof and an oxygen seeking nonmetal/metalloid, wherein said deoxidizing element and nonmetal/metalloid is present between 20%-70% in said iron based metallic coating alloy;

(b) melting said iron based metallic coating alloy to a liquid state;

(c) applying said liquid melt of said iron based metallic coating alloy to said oxidized metal surface and removing said oxidized metal surface layer to provide a metal surface that is substantially clean of said oxidized metal surface layer and susceptible to receipt of a metallic coating; and

(d) applying a iron based metallic coating alloy to said metal surface that is substantially clean of said oxidized metal surface layer wherein said iron based metallic coating has an ASTM C633 bond strength of at least about 5500 psi.

7. (Currently Amended) The method of claim 6 wherein said step of melting said iron based alloy to a liquid state comprises forming a liquid state with no precipitates of said deoxidizing element existing in said liquid state.

Appln. No.: 10/776,472
Amndt. dated April 25, 2005
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8. (Cancelled)
9. (Original) The method of forming a metallic coating according to claim 6, wherein melting said metallic coating alloy and applying said liquid melt comprises thermal spray coating said metallic coating alloy onto said metal surface.
10. (Original) A method of forming a metallic coating according to claim 9, wherein thermal spray coating said metallic coating alloy comprises at least one of wire-arc spraying, plasma spraying, flame spraying and high velocity oxyfuel spraying said metallic coating alloy onto said metal surface.
11. (Currently Amended) A method of forming a metallic coating on a metal surface comprising:
- (a) providing [a] an iron based metallic coating alloy comprising a deoxidizing element wherein said alloy includes a deoxidizing element selected from the group consisting of manganese, chromium, vanadium, titanium, zirconium, hafnium, niobium, lanthanide metals and combinations thereof and an oxygen seeking nonmetal/metalloid, wherein said deoxidizing element and nonmetal/metalloid is present between 20%-70% in said iron based metallic coating alloy;
 - (b) melting said iron based metallic coating alloy to a liquid state;
 - (c) applying said liquid melt of said iron based metallic coating alloy to said metal surface wherein said metal surface contains an oxidized surface layer;

Appln. No.: 10/776,472
Amndt. dated April 25, 2005
Reply to Office Action of December 23, 2004

(d) reducing said oxidized surface layer; and

(e) forming a metallurgical bond at said location where said oxidized surface layer has been reduced by said deoxidizing element wherein said metallic coating has an ASTM C633 bond strength of at least about 5500 psi.

12. (New) The method of claim 6 wherein said oxygen seeking non-metal/metalloid is selected from the group consisting of silicon, carbon, boron, phosphorus, sulfur and combinations thereof.